Mortality among reverse chutta smokers in South India

PRAKASH C GUPTA, FALI S MEHTA, JENS J PINDBORG

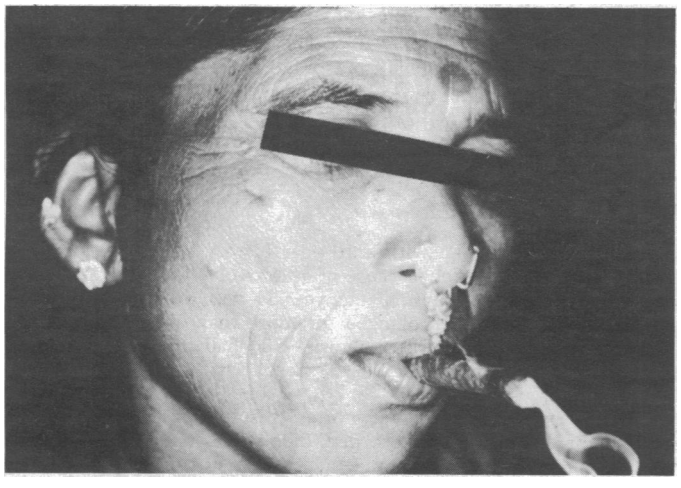
Abstract

A 10 year follow up study was performed of tobacco usage and oral disease in a random sample of 10 169 persons in Srikakulam district between 1967 and 1976. Age adjusted mortality rates in those who indulged in reverse smoking of chuttas (coarse cheroots) were nearly twice those of non-users of tobacco. Oral cancer explained only a small fraction of the excess mortality but reliable information was not available for other causes of death.

Introduction

Many papers have been published on the mortality experience of cigarette, cigar, and pipe smokers. In India tobacco is smoked and chewed in a wide variety of ways. This report analyses 10 year mortality in a randomly selected cohort of individuals whose predominant method of tobacco usage was reverse chutta smoking—smoking of chuttas with the lighted end inside the mouth.[1]

A chutta is a coarsely prepared cheroot varying in length from 5 to 9 cm. Reverse chutta smoking is widespread in certain coastal districts of Andhra Pradesh, particularly Vishakhapatnam and Srikakulam. Whereas men smoke chuttas in either a conventional or a reverse fashion, women almost exclusively smoke chuttas in reverse fashion as they consider this a more feminine way of smoking (see figure). Typically the reverse smoker smokes up to two chuttas a day because in this form of smoking a chutta lasts longer. Several explanations for reverse smoking are advanced, the most prominent being that the chutta is less likely to be extinguished by water being splashed on it during household work, as well as the possibility of hot ashes falling on nursing infants. Reverse smoking has also been reported from other parts of the world with similar explanations.[2]



A reverse chutta smoker. The lighted end and a portion of chutta is inside the mouth.

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Subjects and methods

A random sample of villages in Srikakulam district was chosen and 10 169 persons aged 15 years and over were interviewed about their tobacco usage in a house to house survey performed in 1967 as a part of a study on oral cancer and precancerous lesions.[1] These individuals were interviewed again three years later and then every year until 10 year follow up results were obtained.[3] The proportion followed up, which represents the individuals available for oral examination, was 87%. The loss to follow up was mainly due to migration outside the district. The information about mortality was collected from the next of kin.

Results

In the original sample 47% practised reverse chutta smoking (34% of men and 59% of women). Conventional chutta smoking and bidi smoking were common only among men, being practised by 30%. Tobacco chewing was less popular (4% of men and 3% of women) and both chewing and smoking were practised by 12% of men. Tobacco was chewed in many fashions: alone, with lime, or along with betel leaf, lime, and areca nut. Some 19% of men and 33% of women did not use tobacco at all. Tobacco habits did not change much during the follow up period.[3]

After 10 years' follow up, 80 612 person years of observation were available for analysis and 1432 deaths were recorded. Age adjusted mortality rates were calculated separately for men and women for each tobacco habit (see table). For age adjustment the data were divided into 10 year age intervals. Some categories of tobacco usage were combined: for men bidi and conventional chutta smoking and for women use of tobacco in all forms other than reverse smoking.

Age adjusted mortality rates according to sex and the type of tobacco habit

	Person years	Deaths	Age adjusted mortality rate per 1000	Relative risk (age adjusted)
		Men		
No tobacco habit	7 995	73	10·4	1·00
Conventional smoking	16 989	246	18·5	1·77
Reverse smoking	14 683	357	20·3	1·95
Chewing	1 460	40	20·5	1·96
Multiple usage	2 749	41	12·5	1·20
		Women		
No tobacco habit	10 517	100	11·8	1·00
Reverse smoking	24 561	556	20·7	1·91
Chewing and other usage	1 658	19	13·4	1·24

For men as well as women the age adjusted mortality rates were nearly twice for reverse smokers than for those who did not use tobacco in any form (relative risk 1·95 and 1·91 respectively). Relative risk was also high for conventional smokers (1·77) and tobacco chewers among men (1·96).

Discussion

Reverse smoking and other forms of tobacco use are known risk factors for oral cancer. As all individuals were being examined for oral cancer it was known that 14 deaths occurred from oral cancer in the study sample. Thus oral cancer explained only a small fraction of the excess mortality. Reliable informa-

tion, however, was not available for other causes of death. In the process of random sampling mostly interior villages were chosen, where qualified medical practitioners were generally not available.

A shortcoming of the present analysis may be that the mortality rates were not adjusted for socioeconomic status. Nevertheless, only a small percentage of the target population could be classed as not being poor and therefore, unless the numbers in some categories are small, the confounding effect (if any) would not cause any appreciable difference. The numbers were small for tobacco chewers and multiple users for men and chewing and other usage for women.

Bidi smoking and chewing tobacco with betel leaf are known to carry a 30-50% higher risk of mortality.[4 5] Thus tobacco usage appears to be injurious to health in any form and more so in the form of reverse chutta smoking.

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References

1 Pindborg JJ, Mehta FS, Gupta PC, Daftary DK, Smith CJ. Reverse smoking in Andhra Pradesh, India: A study of palatal lesions among 10 169 villagers. *Br J Cancer* 1971;**25**:10-20.
2 Quigley LF, Shklar G, Cobb CM. Reverse cigarette smoking in Caribbeans: clinical, histologic, and cytologic observations. *J Am Dent Ass* 1966;**72**:867-73.
3 Gupta PC, Mehta FS, Daftary DK. *et al.* Incidence rates of oral cancer and natural history of oral precancerous lesions in a 10-year follow-up study of Indian Villagers. *Community Dent Oral Epidemiol* 1980;**8**:287-333.
4 Gupta PC, Mehta FS, Irani RR. Comparison of mortality rates among bidi smokers and tobacco chewers. *Ind J Cancer* 1980;**17**:149-152.
5 Gupta PC, Bhonsle RB, Mehta FS, Pindborg JJ. Mortality experience in relation to tobacco habits from a 10-year follow-up study in Ernakulam district, Kerala. *Int J Epidemiol* (in press).

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Mechanism of polyuria and natriuresis in atrioventricular nodal tachycardia

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Abstract

A woman with tachycardia associated with polyuria was investigated. Electrophysiological analysis showed that the tachycardia was an atrioventricular nodal re-entrant tachycardia. Programmed stimulation was then used to provoke and sustain the tachycardia for 40 minutes. Polyuria, with an appreciable increase in free water clearance, was observed. This was associated with reduction in plasma and urinary arginine vasopressin concentrations. Appreciable natriuresis also developed.

These results support the hypothesis that the polyuria with increased free water clearance and the natriuresis occurring during sustained tachycardia in man are due to inhibition of secretion of vasopressin and the release of natriuretic factor.

Introduction

The association between paroxysmal tachycardia and polyuria is well recognised and has been reported to occur in 20% to 50% of patients with these arrhythmias.[1 2] Neither the reason why only a minority of these patients develop polyuria nor the exact mechanism producing the polyuria is known, although the observed changes in urine composition suggest that the diuresis is attributable to a reflex inhibition of release of arginine vasopressin induced by an increase in atrial stretch receptor activity during tachycardia.[1 3]

We determined the characteristics of tachycardia in a patient with paroxysmal supraventricular tachycardia and polyuria during elective electrophysiological investigation. After completion of the clinical investigation programmed extrastimuli were used to provoke and sustain the tachycardia so as to permit simultaneous determination of its haemodynamic consequences, the changes in plasma and urinary concentrations of vasopressin, plasma renin activity, and urine flow, osmolality, and electrolyte composition.

Patient and methods

A 55 year old woman with a 10 year history of palpitations was admitted for investigation because of attacks of increasing frequency and severity. The paroxysmal tachycardia was described as being fast and regular and, if prolonged for more than about 20 minutes, was accompanied by profuse polyuria. She had mild effort angina, and the tachycardia was sometimes associated with mild anginal pain. She was otherwise fit.

Physical examination yielded normal results apart from showing labile hypertension, with recorded blood pressures ranging from 220/120 mm Hg to 140/90 mm Hg. The chest radiograph, electrocardiogram, and results of routine tests of haematology and biochemistry were normal. Regular supraventricular tachycardia (170 beats/min) was recorded during an attack of palpitations. Subsequent cardiac catheterisation and angiography confirmed normal left ventricular function. Coronary angiography showed a single 70% stenosis in the midportion of the left anterior descending coronary artery. The bicycle exercise stress test yielded negative results for both angina and 12 lead electrocardiographic changes at a maximum workload of 130 watts, with a peak heart rate of 150 beats/min and blood pressure of 255/85 mm Hg.

Cardiac electrophysiology—Routine electrophysiological investigation of tachycardia, without premedication, was done using standard multiple simultaneous intracardiac and extracardiac recordings. Programmed cardiac stimulation was used to provoke the tachycardia.

Haemodynamics—Right atrial, pulmonary artery, and pulmonary wedge pressures were measured via a right atrial catheter and a

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